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ATTY. DOCKET NO. 22253-67116 US	SERIAL NO. 10/009,581
APPLICANT CIVAN et al.	
FILING DATE 04/30/2002	GROUP not yet assigned

## U.S. PATENT DOCUMENTS

EXAMINER INITIALS	CITE NO.	DOCUMENT NUMBER	NAME OF PATENTEE OR APPLICANT OF CITED DOCUMENT	DATE OF PUBLICATION OF CITED DOCUMENT MM-DD-YYYY	PAGES, COLUMNS, LINES WHERE RELEVANT PASSAGES OR RELEVANT FIGURES APPEAR
<i>MM</i>	A	4,017,579	Roe et al.	04/12/1977	
	B	4,158,005	Bodor et al.	06/12/1979	
	C	4,396,625	Yamamori et al.	08/02/1983	
	D	4,425,346	Horlington	01/10/1984	
<i>WJ</i>	E	4,981,873	Witte et al.	01/01/1991	

## FOREIGN PATENT DOCUMENTS

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## OTHER PRIOR ART--NON PATENT LITERATURE DOCUMENTS

EXAMINER INITIALS	CITE NO.	INCLUDE NAME OF THE AUTHOR (IN CAPITAL LETTERS), TITLE OF THE ARTICLE (WHEN APPROPRIATE), TITLE OF THE ITEM (BOOK, MAGAZINE, JOURNAL, SERIAL, SYMPOSIUM, CATALOG, ETC.) DATE, PAGE(S), VOLUME-ISSUE NUMBER(S), PUBLISHER, CITY AND/OR COUNTRY WHERE PUBLISHED	T
<i>MM</i>	1	Abraham et al., "Preparation of individual human diploid fibroblasts and study of ion transport," Am J. Physiol 248:C154-C164 (1985)	
<i>MM</i>	2	Alper et al., "Immunolocalization of AE2 anion exchanger in rat kidney," Am J Physiol 273:F601-F614 (1997)	
<i>MM</i>	3	Alper et al. "Expression of AE2 anion exchanger in mouse intestine," Am J Physiol 277:G321-G332 (1999)	

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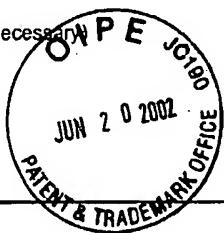
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APPLICANT	
CIVAN et al.	
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04/30/2002	not yet assigned

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4	Alper, "The Band 3-Related AE Anion Exchanger Gene Family," <i>Cell Physiol Biochem</i> 4:265-281 (1994)
5	Bidet et al., "Video microscopy of intracellular pH in primary cultures of rabbit proximal and early distal tubules," <i>Pflügers Arch</i> 416:270-280 (1990)
6	Boron et al., "Intracellular pH Transients in Squid Giant Axons Caused by CO <sub>2</sub> , NH <sub>3</sub> , and Metabolic Inhibitors," <i>J. Gen Physiol</i> 67:91-112 (1976)
7	Bowler et al. "Electron Probe X-Ray Microanalysis of Rabbit Ciliary Epithelium," <i>Exp Eye Res</i> 62:131-139 (1996)
8	Bowler et al., "Effects of Potassium-Free Media and Ouabain on Epithelial Cell Composition in Toad Urinary Bladder Studied with X-Ray Microanalysis," <i>J Membrane Biol</i> 123:115-132 (1991)
9	Butler et al., 'Na <sup>+</sup> - Cl <sup>-</sup> and HCO <sub>3</sub> <sup>-</sup> - dependent Base Uptake in the Ciliary Body Pigment Epithelium," <i>Exp Eye Res</i> 59:343-349 (1994)
10	Caprioli et al., "The Adenylate Cyclase Receptor Complex and Aqueous Humor Formation," <i>Yale J. Biol. Med.</i> 57:283-300 (1984)
11	Carré et al., "Effect of bicarbonate on intracellular potential of rabbit ciliary epithelium," <i>Curr Eye Res</i> 11:609-624 (1992)
12	Chu et al., "Electrical Parameters of the Isolated Monkey Ciliary Epithelium and Effects of Pharmacological Agents," <i>Invest Ophthalmol Vis Sci</i> 28:1644-1648(1987)
13	Civan, "Application of Electron Probe X-Ray Microanalysis (EPMA) to Study of Ionic Recycling and Cell Heterogeneity," Chapter 6 In: <i>Epithelial Ions and Transport: Application of Biophysical Techniques</i> , Wiley, New York (1983)
14	Civan et al., "Regulatory Volume Decrease by Cultured Non-pigmented Ciliary Epithelial Cells," <i>Exp Eye Res</i> 54:181-191 (1992)

EXAMINER	DATE CONSIDERED
	3/17/04

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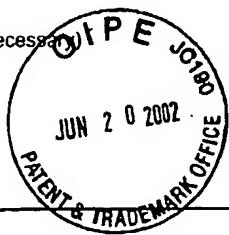
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APPLICANT	
CIVAN et al.	
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04/30/2002	not yet assigned

15	Civan et al., "Regulatory Volume Increase of Human Non-pigmented Ciliary Epithelial Cells," <i>Exp. Eye Res.</i> 62, 627-640 (1996)	
16	Civan et al., "Pathways Signaling the Regulatory Volume Decrease of Cultured Nonpigmented Ciliary Epithelial Cells," <i>Invest Ophthalmol Vis Sci</i> 35:2876-2886 (1994)	
17	Civan, "Transport Components of Net Secretion of the Aqueous Humor and Their Integrated Regulation," <i>Current Topics in Membranes</i> 45:1-24 (1998)	
18	Civan, "Transport by the Ciliary Epithelium of the eye," <i>News Physiol. Sci.</i> 12:158-162 (1997)	
19	Coca-Prados et al., "PKC-sensitive Cl <sup>-</sup> channels associated with ciliary epithelial homologue of pI <sub>Cl<sup>-</sup></sub> ," <i>Am J Physiol.</i> 268:C572-C579 (1995)	
20	Coca-Prados et al., "Expression and cellular distribution of the α1 gap junction gene product in the ocular pigmented ciliary epithelium," <i>Curr Eye Res</i> 11:113-122 (1992)	
21	Cole, "Secretion of the Aqueous Humour" <i>Exp Eye Res</i> 25 (Suppl):161-176 (1977)	
22	Counillon et al., "The Expanding Family of Eucaryotic Na <sup>+</sup> /H <sup>+</sup> Exchangers," <i>J. Biol Chem</i> 275:1-4 (2000)	
23	Counillon et al., "Pharmacological Characterization of Stably Transfected Na <sup>+</sup> /H <sup>+</sup> Antiporter Isoforms Using Amiloride Analogs and a New Inhibitor Exhibiting Anti-ischemic Properties," <i>Mol Pharmacol</i> 44:1041-1045 (1993)	
24	Coupage-Gérard et al., "Biosynthesis and cell surface delivery of the NHE1 isoform of Na <sup>+</sup> /H <sup>+</sup> exchanger in A6 cells," <i>Am J Physiol</i> 271:C1639-C1645 (1996)	

EXAMINER		DATE CONSIDERED
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CIVAN et al.

FILING DATE

04/30/2002

GROUP

not yet assigned

TECH CENTER 1600/2900

NOV 04 2002

RECEIVED

	25	Edelman et al., "Ion transport asymmetry and functional coupling in bovine pigmented and nonpigmented ciliary epithelial cells," <i>Am. J. Physiol</i> 266: C1210-C1221 (1994)	
	26	Escribano et al., "Isolation and Characterization of Cell-Specific cDNA Clones from a Subtractive Library of the Ocular Ciliary Body of a Single Normal Human Donor: Transcription and Synthesis of Plasma Proteins," <i>J Biochem (Tokyo)</i> 118(5):921-831 (1995)	
	27	Frelin et al., "Interaction of guanidinium and guanidinium derivatives with the Na+/H+ exchange system," <i>EUR J. Biochem</i> 154:241-245 (1986)	
	28	Grinstein et al., "Transmembrane Effects of Irreversible Inhibitors of Anion Transport in Red Blood Cells," <i>J Gen Physiol</i> 73(4):493-514 (1979)	
	29	Haas et al., "Bumetanide inhibits (Na+K+2C1) co-transport at a chloride site," <i>Am J Physiol</i> 245:C235-240 (1983)	
	30	Helmle-Kolb et al., "Na/H Exchange activities in NHE1-transfected OK-cells: cell polarity and regulation," <i>Pflügers Arch</i> 425:34-40 (1993)	
	31	Hoffman et al., "Volume Regulation in Cultured Cells," <i>Curr Top Membr Transp</i> 30:125-180 (1987)	
	32	Jacob et al., "Role of ion channels in aqueous humor formation," <i>Am J. Physiol</i> 271:C703-C720 (1996)	
	33	Jiang et al., "Secondary regulatory volume increase conferred on Xenopus oocytes by expression of AE2 anion exchanger," <i>Am J Physiol</i> 272:C191-202 (1997)	
	34	Kaufman et al., "Medical Therapy of Glaucoma," In: <i>Textbook of Ophthalmology</i> , Vol. 7, Podos & Yanoff (eds), Mosby, St. Louis, pp 9.7-9.30 (1994)	
	35	Loffing et al., "Functional and molecular characterization of an anion exchanger in airway serous epithelial cells," <i>Am J Physiol Cell Physiol</i> 279: C1016-C1023, 2000	

EXAMINER

DATE CONSIDERED

3/17/04

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CIVAN et al.FILING DATE  
04/30/2002GROUP  
not yet assigned

Page 5 of 7

RECEIVED  
NOV 04 2002  
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	36	McLaughlin et al., "Effects of HCO <sub>3</sub> <sup>-</sup> on Cell Composition of Rabbit Ciliary Epithelium: A New Model for Aqueous Humor Secretion," <i>Invest Ophthalmol Vis Sci</i> 39:1631-1641 (1998)	
	37	Meinild et al., "The human Na <sup>+</sup> -glucose cotransporter is a molecular water pump," <i>J Physiol</i> , 508:15-21 (1998)	
	38	Mitchell et al. "Effects of Uncoupling Gap Junctions Between Pairs of Bovine NPE-PE Ciliary Epithelial Cells of The Eye," <i>Molecular and Cellular Biology of Transporters I, FASEB J</i> 11:A301, Abstract 1748 (1998)	
	39	Mitchell et al. "Tamoxifen Accelerates The ATP Activated Regulatory Volume Decrease of Bovine Pigmented Ciliary Epithelial Cells," <i>Invest Ophthalmol Vis Sci</i> 38:S1042 (1997)	
	40	Oh et al., "Dye Coupling of Rabbit Ciliary Epithelial Cells in Vitro," <i>Invest Ophthalmol Vis Sci</i> 35:2509-2514 (1994)	
	41	Ohtori et al., "Pharmacokinetics of Tropical β-Adrenergic Antagonists in Rabbit Aqueous Humor Evaluated with the Microdialysis Method," <i>Exp Eye Res</i> 66:487-494 (1998)	
	42	Ortego et al., "Molecular Characterization and Differential Gene Induction of the Neuroendocrine-Specific Genes Neurotensin, Neurotensin Receptor, PCI, PC2, and 7B2 in the Human Ocular Ciliary Epithelium," <i>J Neurochem</i> 69(5):1829-1839 (1997)	
	43	Quigley et al., "The mechanism of optic nerve damage in experimental acute intraocular pressure elevation," <i>Invest. Ophthalmol. Vis. Sci.</i> 19:505 -517(1980)	
✓	44	Raviola et al., "Intercellular junctions in the ciliary epithelium," <i>Invest Ophthalmol Vis Sci</i> 17:958-981 (1978)	
✓	45	Ritch et al., "Angle-Closure Glaucoma: Therapeutic Overview" In: <i>The Glaucomas</i> (eds Ritch, Shields, Krupin) 2 <sup>nd</sup> ed. pp.1521-1531, Mosby, St. Louis (1996)	

EXAMINER	DATE CONSIDERED
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10/009,581APPLICANT  
CIVAN et al.

FILING DATE

GROUP

04/30/2002

not yet assigned

<i>N</i>	46	Rubera et al, "Cl <sup>-</sup> and K <sup>+</sup> conductances activated by cell swelling in primary cultures of rabbit distal bright convoluted tubules," <i>Am J Physiol</i> 273:F680-F697 (1997)	
	47	Scholz et al., "Protective effects of HOE642, a selective sodium hydrogen exchange subtype 1 inhibitor, on cardiac ischaemia and reperfusion," <i>Cardiovascular Research</i> 29:260-268 (1995)	
	48	Shields, <i>Textbook of Glaucoma</i> , 3 <sup>rd</sup> Ed., Williams & Wilkins, Baltimore pp. 11-83 (1992)	
	49	To et al., "Chloride and sodium transport across bovine ciliary body/epithelium (CBE)," <i>Curr Eye Res</i> 17:896-902 (1998)	
	50	Tripathi, "Comparative Physiology and Anatomy of the Aqueous Outflow Pathway," In: <i>The Eye</i> , Chap. 3 pp 163-335, Davson & Graham (eds.), Academic Press, New York, (1974)	
	51	Vareilles et al., "Comparison of the effects of timolol and other adrenergic agents on intraocular pressure in the rabbit," <i>Invest. Ophthalmol Vis. Sci.</i> 16:987-996 (1977)	
	52	Walker et al., "Effect of coupling on volume-regulatory response of ciliary epithelial cells suggests mechanism for secretion," <i>Am J. Physiol</i> 276:C1432-1438 (1999)	
	53	Wax et al., "Purinergic Receptors in Ocular Ciliary Epithelial Cells," <i>Exp Eye Res</i> 57:89-95 (1993)	
<i>↓</i>	54	Wiederholt et al., "Ion Transport Across the Ciliary Epithelium: Lessons from Cultured Cells and Proposed Role of the Carbonic Anhydrase," In: <i>Carbonic Anhydrase</i> , Botre, Gross, Storey (eds), CCH, New York, pp 232-244 (1991)	
<i>N</i>	55	Wiederholt et al., "Membrane potentials and intracellular chloride activity in the ciliary body of the shark," <i>Pflügers Arch</i> 407 (Suppl 2):S112-S115 (1986)	

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CIVAN et al.	
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04/30/2002	not yet assigned

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<i>NO</i>	56	Wolosin et al., "Gap Junctions and Interlayer Communication in the Heterocellular Epithelium of the Ciliary Body," In: The Eye's Aqueous Humor: From Secretion to Glaucoma, Civan (ed), Academic Press, Boston, pp 135-162 (1998)	
<i>NO</i>	57	Wolosin et al., "Effect of Heptanol on the Short Circuit Currents of Cornea and Ciliary Body Demonstrates Rate Limiting Role of Heterocellular Gap Junctions in Active Ciliary Body Transport," <i>Exp Eye Res</i> 64:945-952 (1997)	
<i>NO</i>	58	Yantorno et al., "Volume Regulation of Cultured, Transformed, Non-Pigmented Epithelial Cells from Human Ciliary Body," <i>Exp Eye Res</i> 49:423-437 (1989)	

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## FOREIGN PATENT DOCUMENTS

FOREIGN INVENTION DOCUMENTS							
		Document Number	Date	Country	Class	Subclass	Translation Yes/No/Abstract

**OTHER DOCUMENT(S) (Including Author, Title, Date, Pertinent Pages, etc.)**

B01	Avila, MY, Seidler, RW, Stone, RA and Civan, MM, "Inhibitors of NHE-1 Na <sup>+</sup> /H <sup>+</sup> exchange reduce mouse intraocular pressure," <i>Invest. Ophthalmol. Vis. Sci.</i> 43:1897-1902 (2002).
B02	Avila, MY, Mitchell, CH, Stone, RA and Civan, MM, "Noninvasive assessment of aqueous humor turnover in the mouse eye. <i>Invest. Ophthalmol. Vis. Sci.</i> 44:722-727 (2003).
B03	Mitchell, CH, Fleischhauer, JC, Stamer, WD, Peterson-Yantorno, K and Civan, MM, "Human trabecular meshwork cell volume regulation," <i>Am. J. Physiol.: Cell Physiol.</i> 283:C315-C326 (2002).
B04	Tamm ER, Russell P, Piatigorsky J, "Development and characterization of an immortal and differentiated murine trabecular meshwork cell line," <i>Invest. Ophthalmol Vis. Sci.</i> 40:1392-1403 (1999).
B05	McLaughlin, C.W., Peart, D., Purves, R.D., Carré, D.A., Peterson-Yantorno, K., Mitchell, C.Y., MacKnight, A.D.C. and Civan, M.M., "Timolol May Inhibit Aqueous Humor Secretion by cAMP Independent Action on Ciliary Epithelial Cells," <i>Am. J. Physiol.</i> 281:C-865-C-875 (2001).

**Examiner Signature:**

Date Considered: 14 3/17/09

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